

SCIENCE GONE ASTRAY: EVOLUTION AND RAPE

Elisabeth A. Lloyd*

A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION. By *Randy Thornhill* and *Craig T. Palmer*. Cambridge: MIT Press. 2000. Pp. xvi, 251. \$28.95.

It is clear where the opposition is coming from — it's coming from ideology. . . . Most of the ideology is coming from certain feminist groups. It's not feminism, per se, that's against us. It is certain groups of feminists that are against the application of science for dealing with this problem. That is a socially very irresponsible position.¹

Throughout *A Natural History of Rape*, coauthors Randy Thornhill² and Craig Palmer³ resort to what is known among philosophers of science as "The Galileo Defense," which amounts to the following claim: I am telling the Truth and doing excellent science, but because of ideology and ignorance, I am being persecuted.⁴ The authors have repeated and elaborated upon this defense during the sizable media flurry accompanying the book's publication in February 2000.⁵

* Arnold and Maxine Tanis Chair of History and Philosophy of Science and Professor of Biology, Indiana University, Bloomington. B.A. *summa cum laude*, 1980, University of Colorado, Boulder; Ph.D. (Philosophy) 1984, Princeton. — Ed. I would like to thank Richard Dawkins, Steve Downes, Alex Klein, Michael Wade, and Rasmus Winther for their useful comments on earlier drafts of this Review.

1. Interview by Mike Dano with Randy Thornhill (Feb. 4, 2000), in *Daily Lobo* (U. New Mexico).

2. Regents' Professor and Professor of Biology, University of New Mexico.

3. Instructor of Anthropology, University of Colorado.

4. Thornhill and Palmer write:

Why have researchers attempting to discover the evolutionary causes of rape been denied positions at universities? Why have organizers of scholarly conferences attempted to keep papers on evolutionary analysis of rape from being presented? Why have editors of scholarly journals refused to publish papers treating rape in a Darwinian perspective?

P. 105. And later: "The choice between the social science explanation's answers and the evolutionarily informed answers provided in this book is essentially a choice between ideology and knowledge." P. 189.

5. "In the future, I anticipate, hopefully not the too distant future, that we'll turn this thing around in a sense that people will look back with horror at the kinds of attitudes that Brownmiller is expressing today and, to a degree, Dr. Coyne. And the horror will be in the fact that people did not understand that, in the Dark Ages, the validity and importance of

Now, history has accepted this defense from Galileo. But in order for it to work for Thornhill and Palmer, of course, they must be telling the Truth and doing excellent science. In this Review I shall argue that the Galileo defense is impotent in the hands of Thornhill and Palmer because of glaring flaws in their science.

I. THEIR CLAIMS

Thornhill and Palmer present two alternative evolutionary explanations for the existence of human rape. They claim that rape behavior must either have evolved through a process of natural selection — that it must be a specific adaptation — or it must be the byproduct of some underlying traits which must themselves be adaptations.

Their main arguments for these theses all rest on a hypothesis about the evolution of sex differences: that because women bear the brunt of the effort in reproduction — through pregnancy, nursing, and infant care — they have evolved to be very selective about their mates. Men, on the other hand, by virtue of the possibility of being able to reproduce with the minimal investment of mere ejaculation, have evolved to seek out as many mates as possible, and to copulate with no intention of co-parenting or providing. This has led to such traits of male sexuality as the desire for casual sex, the seeking out of a wide variety of mates, and a stronger disregard for the particular features of a given mate. Hence, female and male “reproductive strategies” differ: women choose mates carefully, whereas men seek multiple mates.⁶

Here is how each of Thornhill and Palmer’s two theses about rape relies on this picture of evolved male sexuality. They call their first hypothesis — that men have evolved, through natural selection, a specific tendency toward rape behavior — the “rape-specific” hypothesis. On this view, men who had trouble attaining sexual access to females — especially because of low status or evidence of inferior genetic make-up — must have resorted to rape in order to satisfy their sexual urges to mate with a larger number of women. This trait, a disposition to rape behavior, helped get these males’ genes into the human gene pool by increasing mate number, and thereby increasing the frequency of “rape genes” in the population, through the process of natural selection. In other words, the reproductive problems facing our human ancestors were very specific, and thus the mechanism that “solved”

science for correcting our social problems. But specifically in response to the kind of data that we have in there, it’s all scientific approach. . . .” *Talk of the Nation* (Nat’l Public Radio, Jan. 26, 2000) (comments of Randy Thornhill); see also Erica Goode, *What Provokes a Rapist to Rape?*, N.Y. TIMES, Jan. 15, 2000, at B9; Scott Sandlin, *Rape a Biological Act, UNM Professor Writes*, ALBUQUERQUE J., Jan. 22, 2000, at A1; Lawrence Spohn, *Balance of Power*, GRAND RAPIDS PRESS, Jan. 14, 2000, at A2.

6. This is a standard view among many biologists working on human and animal evolution.

these problems — i.e., the tendency to rape itself — is also specific. Therefore, the rape-specific adaptation hypothesis is favored.

Evolution by natural selection occurs when individuals of one type of genetic makeup (genotype) reproduce more successfully than individuals of other types of genetic makeup, resulting in a change within the whole population of the proportions of each type. In order for natural selection to work in favor of a particular genotype, the genotype must be associated with a trait that is inheritable and that increases the organism's reproductive success. In this case, the rapists would succeed reproductively while men who were otherwise genetically equivalent but who were not rapists would have failed at reproducing. The long-term effect of this pattern of reproductive success on human demographics would thus have been the increasing frequency of the rapist type within the human population.

When a trait evolves (or is "chosen") through natural selection, it is called an evolutionary *adaptation*. Thus, the primary hypothesis defended in Thornhill and Palmer's book is that rape is an evolutionary adaptation — that it evolved because rape behavior itself was reproductively superior to nonraping behavior.

Under Thornhill and Palmer's second hypothesis, which they call the "byproduct" view, evolved psychological traits such as the male desire for a wide variety of mates led accidentally to the existence of rape, but rape itself was not directly selected. That is, the act of rape is an incidental byproduct of other male sexual adaptations, "especially those that function to produce the sexual desires of males for multiple partners without commitment" (p. 60). The phenomenon of evolutionary "byproducts" is frequent in human evolution. Manual dexterity, for example, was directly selected because it was reproductively advantageous to our ancestors for making tools, etc., and is therefore an adaptation. Our use of manual dexterity in playing the piano is a byproduct of the selection on manual dexterity. It is not an evolutionary adaptation itself. Note that selection leading to evolutionary adaptation is involved in this scenario, but the trait of playing the piano is distinct from the evolutionary adaptation itself; it is an epiphenomenon.

Thornhill and Palmer consider each of these hypotheses about the evolution of human rape — the hypothesis that rape is a specifically selected adaptation, and the hypothesis that rape is an evolutionary byproduct of selection on other traits. Most of their attention, however, centers on the rape-specific hypothesis.

To buttress this hypothesis, Thornhill and Palmer propose a number of subsidiary psychological adaptations that would have increased men's chance of reproductive success when attempting to rape. Proposed mechanisms include men having: (1) a special psychological adaptation that enables them to evaluate females' vulnerability to rape (p. 66); (2) a special psychological adaptation to prefer to rape women

at peak fertility (p. 71); (3) a psychological adaptation to be sexually aroused by gaining physical control over an unwilling sexual partner (p. 75); (4) a psychological adaptation to rape wives and girlfriends if they believe their women are cheating on them (pp. 77-78); and finally, (5) a psychological adaptation for male paranoia about women's claims of being raped (p. 158).

But under either evolutionary scenario women are also hypothesized to have evolved rape-related adaptations — specifically, an adaptation for psychological anguish upon being raped. The supposition is that rape victims suffer an overall loss in reproductive success. Psychological anguish is thus hypothesized to have been an adaptation to help women guard against such reproductive loss. The psychological adaptation focuses the victim's attention on the causes of the loss and helps her avoid repetition of those causes (p. 85). The basic evolutionary assumptions here are that rape reduces a woman's reproductive success by circumventing her mate choice, that it reduces her mate's reproductive success by lowering his certainty of paternity, and that it reduces the fitness of the relatives of the victim and her mate (p. 85). In addition, reproductive losses could be expected from getting raped, insofar as the act causes physical injury, the loss of a victim's ability to use copulation as a means of obtaining material benefits from men, the interference with a victim's mate's protection of her, or a reduction in the quality or quantity of parental care given by her mate (p. 86).

According to Thornhill and Palmer, the adaptation of psychological anguish manifests itself differently in different circumstances of rape. Women of peak reproductive age are hypothesized to experience more psychological pain than females of either pre- or post-reproductive age (pp. 89-90). This is because the reproductive costs to these young women from getting raped are higher.

In addition, Thornhill and Palmer predict that reproductive-age victims will experience more violent attacks than the pre- or post-reproductive-age rape victims (pp. 91-92). The basis of this prediction lies in the hypothesis that reproductive-age women are more likely to fight back "because of the greater evolutionary historical cost to their reproductive success of being raped" (pp. 91-92), and that rapists would be more highly sexually motivated to complete the rape in reproductive-age victims because of these victims' greater sexual attractiveness relative to victims in the other two categories (p. 92).

Other hypothesized adaptations among females include: (1) the tendency to experience decreased psychological pain as the violence of the attack increases — this is because physical injury helps to prove to her mate that the sex really was forced and not consensual (p. 92); (2) "the absence of orgasm during rape" (p. 99); and (3) the tendency to avoid risky situations, especially during the fertile phase of her cycle (p. 100).

Thornhill and Palmer then use the supposed existence of female psychological rape adaptations to bolster their claims for specific male psychological rape-adaptations and to counter two alternatives to their theory. One would expect to find rape behavior to be ubiquitous in human societies, if it is genuinely adaptive for men; "women's apparent adaptation to deal with rape . . . implies that rape has been common enough in human evolutionary history to select for counter-adaptations in women" (p. 57). This, they claim, refutes the alternative explanation that rape results from a low-frequency mutation, where a rape mutation would occur in the population, but would not be selected either for or against. Such an explanation would imply that rape is not an evolutionary adaptation (p. 57). They also use the hypothesized female adaptations against rape to argue that rape is not a recently derived cultural anomaly generated by new circumstances in the human environment (p. 58). In other words, they use the supposed female adaptations against rape to rule out two possible alternatives to their two favored hypotheses.

In sum, the authors focus their attention on what they present as the only two plausible candidates for the evolutionary explanation of rape: either it is an adaptation itself, or it is a byproduct of other aspects of evolved male sexuality. There is much more to be said regarding the evidence that they offer for this panoply of psychological adaptations to rape, both male and female, some of which I cover in Part III below. But first we must investigate the soundness of the entire evolutionary framework within which the authors work.

II. THE THEORY

This Part examines Thornhill and Palmer's use of evolutionary biology. They begin by claiming that "selection is the most important cause of evolution," a contested, empirical claim (p. 8). What is evident from this bit of theoretical positioning is that Thornhill and Palmer are in the business of looking for explanations of traits in relation to the selective causes that produced them, thus ignoring the other four accepted forces of evolution — drift, mutation, recombination, and gene flow among groups in subdivided populations.⁷ Evolutionary biologists standardly refer to strategies like Thornhill and Palmer's as "adaptationism," since such approaches seek to explain all interesting traits in terms of selective forces alone. In fact, Thornhill and Palmer *equate* an "ultimate or evolutionary analysis" with adaptationism explicitly. They claim that the challenge for such an analysis is "to determine the nature of the selective pressure that is responsible for the trait. That selective pressure will be apparent in the functional

7. See ELIZABETH A. LLOYD, *THE STRUCTURE AND CONFIRMATION OF EVOLUTIONARY THEORY* (2d ed. 1994).

design of the adaptation" (p. 9). In other words, they want to infer information about the selection pressure from the "design" of a trait, and to assume that the only relevant evolutionary force shaping the trait was natural selection.

This is not the way evolutionary analysis is typically done. First, Thornhill and Palmer simply assume that rape behavior constitutes a single, genuine trait. In fact, the standards of evolutionary biology require that they independently establish this assumption. To establish evolutionary traithood independently, the scientist must show that the trait has some distribution in the population and that is inherited. But establishing that rape is a single trait could perhaps be a problem because of its wide variety of types of occurrences — because, in other words, the majority of rape victims are babies, men, animals, post-menopausal women, etc.⁸ In addition, Thornhill and Palmer offer no studies of the inheritance of raping behavior.

One also needs to show that the trait *is* an adaptation. There are a number of ways to do this. One is to look at existing genotypic and phenotypic⁹ variations in the current population of the trait: given that few men rape, there would seem to be ample evidence of variation from which to work. From this variation, the scientist can then compare the differences in reproductive success between those exhibiting the trait and those not. If a positive reproductive advantage for those exhibiting the trait is found, then the evolutionist starts to look for the possible adaptive scenarios under which the trait could have evolved.

Another important research avenue exists for establishing that a trait is an adaptation. Evolutionary biologists often compare the species in question (in this case, human beings) with their closest relatives to see if the trait is manifested elsewhere in the lineage. This approach is not foolproof, but it does provide important information regarding when the trait might have evolved, and under what circumstances. If the trait is found to be an adaptation in closely related species, then it can be viewed with more confidence as an adaptation in human beings.

Finally, especially if the trait is not exhibited with any frequency in the closely related species, the scientist must examine the past evolutionary circumstances of human beings very carefully for evidence that there was, indeed, a plausible set of circumstances under which the trait could have evolved. This would involve examination of past social structures, population sizes, migration rates, and material culture.

These are the customary standards in evolutionary theory necessary to demonstrate that a trait is an adaptation. Not all of these re-

8. See *infra* notes 13-15 and accompanying text.

9. The phenotype of an organism is the particular collection and arrangement of all its manifest physical traits.

search questions may be answerable, in which case the conclusion that a trait is an adaptation is correspondingly weakened.

The fact that Thornhill and Palmer do not adhere to any of these standards of evidence was pointed out by Frans B.M. de Waal, a distinguished primatologist who works on evolutionary adaptations himself, in a review in *The New York Times*. As de Waal puts it: "for natural selection to favor rape, rapists would have to differ genetically from nonrapists and need to sow their seed more successfully . . . causing more pregnancies than nonrapists, or at least more than they would without raping. Not a shred of data for these two requirements is presented."¹⁰

One of the ways that Thornhill and Palmer attempt to get around some of these evidentiary requirements is to claim that selection in the past has *fixed* the trait in the population, i.e., that *all* men (and women) now carry the genetic underpinnings that could lead to raping behavior (pp. 57, 80, 142, 194). This move — undefended as it is — allows them to skip the potential evidentiary requirement of showing reproductive correlations between carrying the genetic underpinning and not carrying the genetic underpinning in the present population.

But it does not relieve them of the other burdens of evidence listed above. In fact, nowhere in the book do the authors present evidence regarding either relevant details of the past evolutionary environment or comparisons with our closest relatives. Nor do they discuss seriously the possibility that rape itself is not a single trait.

Moreover, despite their own warning that the trait of rape behavior is not necessarily adaptive to *current* conditions, nearly all of the evidence they offer concerns precisely contemporary circumstances of rape (pp. 71-73, 88-89). This could be relevant evidence if they showed the relative reproductive success of rapists and nonrapists, but they do not. Thus, according to the usual evolutionary standards of evidence regarding demonstration that a trait is an adaptation, Thornhill and Palmer fail rather spectacularly. They *begin* by assuming that rape is a single trait, and that this trait is an adaptation, and they reason backwards from there. Needless to say, this undermines their repeated claims that they are doing good science.

Thornhill and Palmer cite G.C. Williams's famous admonition that not all aspects of an organism are adaptations produced by natural selection, and that "adaptation is a special and onerous concept that should be used only where it is really necessary."¹¹ And, in fact, even if one can show that a trait increases reproductive success, one cannot

10. Frans B.M. de Waal, *Survival of the Rapist*, N.Y. TIMES, April 2, 2000, § 7, at 24. Presumably, de Waal intends for these requirements to be met at some point in evolutionary time.

11. P. 9 (quoting GEORGE C. WILLIAMS, ADAPTATION AND NATURAL SELECTION 4 (1966)).

conclude that it is an adaptation, according to Williams. Williams requires that, in order to show that a trait was designed by natural selection, one must show at least that a trait accomplishes its alleged function with "sufficient precision, economy, and efficiency, etc."¹² This is a challenging requirement to meet in the case of human rape, considering that 29% of rape victims are ten years of age or under,¹³ that much rape involves oral or anal intercourse, that only 50% of males achieve ejaculation during vaginal rape,¹⁴ and that male-male rape makes up approximately 23% of rapes.¹⁵

In order to avoid this difficult standard, Thornhill and Palmer appeal to one of their most-cited authors, Donald Symons, who wrote *The Evolution of Human Sexuality*,¹⁶ and who, by the way, introduced a new low in "scientific" evidence by using *Playboy* magazine mail-in survey results to support some of his conclusions.¹⁷ Symons's own interpretation of Williams's strict requirement significantly softens the demand for evidence needed to show an adaptation. He says that Williams only requires that one "rule out chance as an adequate explanation of [a trait's] existence."¹⁸ Very few evolutionists would accept this as an adequate reading of Williams's book.

Thornhill and Palmer demonstrate that they are not engaged in careful scientific analysis when they ignore all of this, instead claiming that one can rule out drift and mutation as forces in explanations of evolutionary history when a trait "shows evidence of functional design" (p. 10). But they make no mention of Sewall Wright's results to the contrary in population genetics,¹⁹ which clearly demonstrate the possibility of mutation and drift playing a major role in producing adaptations, in his Shifting Balance theory.

Thornhill and Palmer even misunderstand the role of mutation *per se* in evolution by claiming that "mutation, as an evolutionary cause for traits, may apply only to those traits that are only slightly above zero frequency in the population" (p. 10). In fact, this is true only for strongly deleterious traits; modern population genetics, in the so-

12. P. 10 (quoting WILLIAMS, *supra* note 11, at 10).

13. P. 72; DEAN G. KILPATRICK ET AL. FOR NAT'L VICTIM CENTER, RAPE IN AMERICA: A REPORT TO THE NATION § 1 (1992).

14. P. 121; see Jerry A. Coyne, *Of Vice and Men*, NEW REPUBLIC, April 3, 2000 (reviewing RANDY THORNHILL & CRAIG PALMER, A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION (2000)).

15. A 1998 U.S. study showed that about 302,100 women and 92,700 men are raped each year nationwide. See Michael Ellison, *The Men Can't Help It*, THE GUARDIAN (LONDON), January 25, 2000, at 4.

16. DONALD SYMONS, *THE EVOLUTION OF HUMAN SEXUALITY* (1979).

17. *Id.* at ch. 7.

18. P. 10 (quoting SYMONS, *supra* note 16, at 11).

19. Sewall Wright, *Evolution in Mendelian Populations*, 16 GENETICS 97 (1931).

called "neutral theory,"²⁰ allows for much higher rates of mutation retention in the absence of selection.²¹

One especially startling aspect of in Thornhill and Palmer's version of evolutionary theory is their claim that "the study of the profound implications of evolutionary theory — particularly the ability of selection to form adaptations — has, until recently, been relatively unexplored" (p. 106). Now, anyone who knows the history of evolutionary biology knows this is an incorrect statement.²² This is just part of the so-called evolutionary psychologists' valorization of themselves as starting a "new" movement in evolutionary biology. Thornhill and Palmer exhibit their identification of evolution with adaptation by evolution yet again by claiming that "the diversity of life has two major components: adaptations and the effects of adaptations" (p. 11). This claim demonstrates their ignorance of the population genetics models showing the power of mutation and drift to shape life-forms and species. These oversights are not trivial. The authors' ignorance of the actual theory of evolution damages their credibility — especially in light of their repeated claims that they are experts in evolutionary theory.

Is it possible, though, that their ignorance of the actual workings of evolutionary theory has no real consequences for their overall line of reasoning? No, for they rely on these misunderstandings to eliminate alternative hypotheses regarding the evolution of rape. For example, they list four evolutionary causes of trait change or trait maintenance in evolutionary lines — selection, drift, gene flow, and mutation — and end up discarding all but selection as a possible evolutionary cause of rape behavior (pp. 56-59). The most bizarre aspect of the little set of arguments that they use is that, despite their later acknowledgment that population geneticists are the experts in determining the balances and possibilities of those four causes (p. 106), they cite *no* population geneticists in their arguments that selection alone explains the existence of rape. Instead, they fabricate their own conclusions about the

20. See MOTOO KIMURA, *THE NEUTRAL THEORY OF MOLECULAR EVOLUTION* (1983).

21. Thornhill and Palmer make use of their mistaken view about mutation on p. 57, in the context of dismissing the hypothesis that rape could have arisen as a mutation balanced by selection.

22. See, e.g., JENS CLAUSEN, *STAGES IN THE EVOLUTION OF PLANT SPECIES* (1951); CHARLES DARWIN, *ON THE ORIGIN OF SPECIES* (Harvard Univ. Press 1964) (1859); THEODOSIUS DOBZHANSKY, *GENETICS AND THE ORIGIN OF SPECIES* (1937); VERNE GRANT, *THE ORIGIN OF ADAPTATIONS* (1963); DAVID LACK, *THE NATURAL REGULATION OF ANIMAL NUMBERS* (1954); ERNST MAYR, *SYSTEMATICS AND THE ORIGIN OF SPECIES* (1942); PHILLIP M. SHEPPARD, *NATURAL SELECTION AND HEREDITY* (1958); GEORGE G. SIMPSON, *THE MAJOR FEATURES OF EVOLUTION* (1953); GEORGE L. STEBBINS, *VARIATION AND EVOLUTION IN PLANTS* (1950); Richard C. Lewontin, *Dobzhansky's Genetics and the Origin of Species: Is it Still Relevant?*, 147 *GENETICS* 351 (1977); Wright, *supra* note 19.

likelihood of each cause, and then present their foregone conclusion: that only selection could have caused the propensity to rape.

Return to Thornhill and Palmer's main fallacious conclusion: that "the diversity of life has two major components: adaptations and the effects of adaptations" (p. 11). Regarding "effects of adaptations," they give the useful example of the trait of the red color of human blood. This trait is a byproduct or epiphenomenon of the chemistry of oxygen and hemoglobin in the blood, plus the existence of human color vision. Byproducts or epiphenomena are not directly selected for their advantages to reproductive success, unlike real adaptations.

Thornhill and Palmer make a contentious claim about these epiphenomena, namely, that they are *always* byproducts of adaptations for other things. This does not follow, and it is not the mainstream evolutionary view. For example, many traits categorized as evolutionary byproducts are understood as phylogenetic remnants, leftovers from the evolutionary ancestors of the species in question. But this does not mean that they ever were or were not under selection pressure. Take the human trait of having five fingers on each hand. This trait traces to the beginnings of the vertebrate lineage. Some vertebrates — horses, for example — endured selection pressure to change the number of phalanges, from five down to one for each limb. Other vertebrates underwent selection for grasping branches, reducing the number to four, and yet most vertebrates retain the five-digit limb. Now, does the fact that human beings customarily have five digits signify that there was selection for five and only five digits in human ancestry? The generally accepted evolutionary answer is "no."²³ *Deviations* from the basic vertebrate body-plan of five digits are understood as having undergone mutation and selection for those mutations, while the default property of having five digits is not seen as having been directly selected in this case. This phenomenon is called "phylogenetic inertia," wherein a trait remains the same unless it is actively selected to change. This is true even in the deep evolutionary past, at the beginnings of the vertebrate line, where having five rather than four digits was perhaps an incidental side-effect of selection on other aspects of the vertebrate skeleton, or may well have been the only variant that, for other reasons, survived to found the lineage of vertebrates.

Thornhill and Palmer hold a deviant evolutionary view of the role of phylogenetic inertia in evolutionary explanations. They claim that phylogenetic inertia — or the difficulty of changing body plans and the resultant continuation of a trait in a lineage — *is not an evolutionary explanation of anything*, because it does not involve an evolutionary "cause" of the maintenance of a trait in a lineage of species. This is because the phylogenetic cause of a trait in a given species does not iden-

23. See STEPHEN J. GOULD, ONTOGENY AND PHYLOGENY (1977).

tify the "ultimate cause of the continuance" (p. 55). They use a clever example to bolster this view: the trait of the crossing over of the digestive and respiratory tracts in (land) vertebrates. Here, they claim, the trait is maintained in all relevant species through constant selection. Such a set-up, awkward and dangerous though it is, was necessary to maintain the digestive and respiratory functions through the history of vertebrates. And (land) vertebrates not conforming to the basic body plan would be nonviable, and would be selected against. Therefore, they conclude, "all evolutionary constraints and phylogenetic legacies ultimately involve selection in some way" (p. 56). But think: does this argument apply equally well to having five digits, a trait that just as likely was fixed in the phylogenetic past as an incidental correlate to a basically successful body plan? Of course not.

Thus it is incorrect, according to modern evolutionary theory, to say that *every trait* is either an adaptation or an effect of an adaptation in the sense that Thornhill and Palmer use this dichotomy. And this mistake profoundly weakens Thornhill and Palmer's basic position, for they use this false dichotomy to set up a false choice: either rape is a *specific adaptation*, directly selected for in virtue of its superior reproductive success, or it is a *byproduct of other adaptations*, an incidental side effect of special-purpose adaptations to circumstances other than rape. These two options are not, in fact, exhaustive.

Having set up their supposedly exhaustive choice between a direct-adaptation and a byproduct, they proceed to argue that *very specific* psychological adaptations should be selected for in evolution. This discussion reveals their adherence to the scientifically undefended thesis — in fact, one contradicted by neurophysiological evidence²⁴ — that the brain is constructed of a high number of very special-purpose physiological mechanisms. This view is a familiar hobby-horse of a group of authors calling themselves "evolutionary psychologists."²⁵

While on the topic, I should point out the exceedingly high density of references to this small group of authors in this book, who themselves engage in heavy cross-citation, and the fact that these authors are considered a fringe group by most evolutionary theorists. This group repeatedly demonstrates its narrow understanding of evolutionary theory itself, and its misinterpretations of some elements of modern evolutionary biology; and they rarely cite more mainstream evolutionary theory or genetics, either contemporary or historical.²⁶

24. See D. Buller & F.G. Hardcastle, *Evolutionary Psychology, Meet the Developing Brain: Combating Promiscuous Modularity*, BRAIN AND MIND (forthcoming 2001).

25. Pp. 15-20; see Elisabeth A. Lloyd, *Evolutionary Psychology: The Burdens of Proof*, 14 BIOLOGY & PHIL. 211 (1999).

26. E.A. Lloyd & M.W. Feldman, *Evolutionary Psychology: A View from Evolutionary Biology*, PSYCHOL. INQUIRY (forthcoming 2001).

At any rate, Thornhill and Palmer claim that we should expect human psychological adaptations to be special-purpose rather than general-purpose. This supposedly buttresses the rape-specific adaptation hypothesis in the following way: the reproductive problems facing our human ancestors were very specific, therefore the mechanism, i.e., the tendency to rape itself, that "solved" these problems is also likely to be specific and not a byproduct of a more general adaptation, and thus favored by evolution.

Other literature on the relations between human culture and psychology and genetics in evolutionary biology is oddly missing from Thornhill and Palmer's book. Thornhill and Palmer ignore the careful, quantitative and theoretical work that has been done on the coevolution of genes and culture.²⁷ These authors concentrate on the mutual effects that genes and culture have had and can have on human evolution. Unlike Thornhill and Palmer, they do not see cultural and biological explanations as on the same *level* of explanation, nor do they attempt to reduce one to the other.²⁸ While Thornhill and Palmer do appeal to one of these authors' works (once) (p. 27), conclusions in this section of their book aim toward showing that cultural research has no legitimate explanatory role outside of direct evolutionary considerations. They approvingly quote Margo Wilson when she writes: "Darwinian selection is the only known source of the functional complexity of living things, and biologists have no reason to suspect that there are any others."²⁹ Contrary to this claim, the biologists working on gene-culture coevolution see culture as an important contributor to the evolved complexity of human beings. Nevertheless, Thornhill and Palmer maintain, "[t]he realization that culture is behavior places it clearly within the realm of biology, and hence within the explanatory realm of natural selection" (p. 25). But in contrast to Thornhill and Palmer, the above authors³⁰ have shown that different explanatory levels are legitimate in evolutionary theory.

27. E.g., ROBERT BOYD & PETER J. RICHESON, *CULTURE AND THE EVOLUTIONARY PROCESS* (1985); L. L. CAVALLI-SFORZA & MARCUS W. FELDMAN, *CULTURAL TRANSMISSION AND EVOLUTION* (1981); WILLIAM H. DURHAM, *COEVOLUTION: GENES, CULTURE AND HUMAN DIVERSITY* (1991); L. L. Cavalli-Sforza & M.W. Feldman, *Darwinian Selection and "Altruism"*, 14 *THEORETICAL POPULATION BIOLOGY* 268 (1978); Kevin N. Laland et al., *Niche Construction, Biological Evolution, and Cultural Change*, 23 *BEHAV. & BRAIN SCI.* 131 (2000); Kevin N. Laland et al., *The Evolutionary Consequences of Niche Construction: A Theoretical Investigation Using Two-Locus Theory*, 9 *J. EVOLUTIONARY BIOLOGY* 293 (1996); Richard C. Lewontin, *Gene, Organism, and Environment, in EVOLUTION FROM MOLECULES TO MEN* 273 (D.S. Bendall for Darwin College ed., 1983).

28. Different "levels of explanation" appeal to different entities and laws, at distinct levels of the organization of life. See *infra* notes 53-54 and accompanying text.

29. P. 122 (quoting Margo Wilson et al., *Femicide: An Evolutionary Psychological Perspective*, in *FEMINISM AND EVOLUTIONARY BIOLOGY* 431, 433 (Patricia A. Gowaty ed., 1997)).

30. See *supra* note 27.

III. THE EVIDENCE

This Part considers some of the specific evidence and arguments Thornhill and Palmer offer to support their various claims about evolutionary adaptations, bearing in mind the usual evolutionary standards of evidence discussed previously. Overall, as Jerry Coyne and Andrew Berry pointed out in their review in *Nature*, at least three types of problems inhere in the evidence presented by Thornhill and Palmer: it "either fails to support their case, is presented in a misleading and/or biased way, or equally supports alternative explanations."³¹ This Part reviews their samples of each problem and then moves on to other flaws.

Coyne and Berry note that Thornhill and Palmer rely heavily on the claim that rape victims of reproductive age are strongly overrepresented among rape victims to support their view that the rapists' evolutionary agenda is reproductive in nature. But, Coyne and Berry point out, some data Thornhill and Palmer present actually contradict this claim. In a 1992 survey attempting to overcome the serious statistical problem of unreported rapes, 29% of female U.S. rape victims were ten years of age and under (p. 72). Given that this age group comprises about 15% of the female population, nonreproductive age females were *overrepresented* by a factor of two in the set of rape victims.³² Clearly, the trait of raping under-age girls would not be adaptive, yet Thornhill and Palmer try to explain the statistics away by emphasizing that the data did not contain information regarding how many of these ten-and-under girls were exhibiting secondary sexual characteristics (p. 72). As Coyne and Berry note, this is a rather glaring case of special pleading, which effectively undermines Thornhill

31. Jerry A. Coyne & Andrew Berry, *Rape as an Adaptation: Is this Contentious Hypothesis Advocacy, Not Science?* 404 *NATURE* 121, 121 (2000) (reviewing RANDY THORNHILL & CRAIG T. PALMER, *A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION* (2000)). Coyne is an evolutionary population geneticist in the Department of Ecology and Evolution at the University of Chicago, one of the strongest evolutionary biology departments in the world. Andrew Berry is an evolutionary geneticist and a Research Associate at the Museum of Comparative Zoology at Harvard University, part of perhaps the most prestigious set of biological departments in the world. Nevertheless, in an astonishing reply, Thornhill reacted to the Coyne and Berry review saying, "[t]hese *anti-evolution* critics don't like evolution applied to any feature of life, but especially not to human traits." *Rape Theory Attacked; Evolutionary Basis Disputed*, *CINCINNATI POST*, March 9, 2000, at 3A (emphasis added). Generally, Thornhill believes that Coyne and Berry's opposition to the book "is a scientifically invalid view. Therefore, it must be inspired by some ideology. We might as well have gotten our book reviewed by the pope." Richard Monastersky, *Scientists Debunk the Idea that Evolution Makes Rapists*, *CHRON. HIGHER EDUC.*, Mar. 17, 2000, at A24 (reviewing RANDY THORNHILL & CRAIG T. PALMER, *A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION* (2000)).

32. Coyne & Berry, *supra* note 31, at 121. A 1998 U.S. study puts the rate of rape of girls twelve and under at 22%. Ellison, *supra* note 15. This is still approximately 150% of their representation in the population.

and Palmer's claim that they are actually trying to test their hypothesis.

Coyne and Berry also draw attention to a far more dramatic and deceptive use of evidence.³³ Remember, Thornhill and Palmer claim that rape victims of reproductive age (age twelve to forty-four) are more traumatized by rape than females who are either too young (under twelve) or too old (over forty-four) to reproduce (pp. 89-90). This apparent difference in the age classes supposedly supports their contention that rape is essentially a reproductive act. But when Coyne and Berry checked the cited reference for this claim, they found a problem: the original work's conclusions differ crucially from those claimed by Thornhill and Palmer, despite the fact that Thornhill was one of the coauthors of the cited paper. The only real difference in rape victims' anguish is in the under-twelve class, who were recorded as experiencing much less trauma. The reproductive-age group and the over-forty-four group experienced *equal* amounts of trauma. Apparently, in order to avoid a contradiction with their prediction, Thornhill and Palmer used a statistical sleight of hand. They *pooled* the statistic from the under-twelve and the over-forty-four groups in order to have the reduced-trauma under-twelve group overwhelm the statistic from the forty-four-plus group. There are, indeed, lies, damned lies, and statistics.

Coyne and Berry also criticized Thornhill and Palmer for ignoring the fact that some of their evidence equally supports alternative hypotheses. This actually occurs repeatedly, but the case picked out by Coyne and Berry is the claim that women of reproductive age experience more violence during rape than do older women and children, which is used by Thornhill and Palmer to suggest that they fight back harder because they have more reproductive fitness to defend. But, as Coyne and Berry point out, a parsimonious explanation of this fact is that women of reproductive age are physically stronger, and thus most capable of fighting back compared to girls or older women. Coyne and Berry remark, "[i]n exclusively championing their preferred explanation of a phenomenon, even when it is less plausible than alternatives, the authors reveal their true colours. *A Natural History of Rape* is advocacy, not science."³⁴

Consider a few more examples of Thornhill and Palmer's handling of evidence and reasoning. Take their claim that rape is all and only about sexual reproduction — the club they use to batter the view of feminists who hold that rape is about both sex and domination or control of women. Thornhill and Palmer admit in passing that some holders of the byproduct view see rape as resulting from a combination of

33. Coyne & Berry, *supra* note 31, at 122.

34. Coyne & Berry, *supra* note 31, at 122.

male sexual desire and the "drive to possess and control."³⁵ But they dismiss this very plausible evolutionary view by claiming that ordinarily there is no drive to possess and control victims "for prolonged periods of time" (p. 62). But, of course, the period of time is irrelevant to whether that desire is a contributing proximate cause to rape.

And what happened to the patently obvious hypothesis that raping behavior is due to psychopathology? In one of the two studies of developmental factors affecting rape that Thornhill and Palmer do discuss in the book, psychopathology played a leading explanatory role. This study of adolescent male sexual criminals³⁶ found that rapists were characterized by backgrounds of repeated frustration, failed romantic and sexual relationships, as well as lower psychosocial functioning, learning disabilities, and psychological disorders (p. 67). But Thornhill and Palmer want to treat psychopathic men as a group distinct from rapists, claiming (with no evidence) that psychopaths make up a distinct genetic form, and that normal men do not have the same adaptations.³⁷ In fact, they suggest that "psychopathic and normal men possess two *distinct* psychological adaptations with regard to rape — both of which could be condition dependent" (p. 82; emphasis added). Here is yet another candidate for special pleading. Interestingly, this resembles a similar problem that Thornhill and Palmer have with the fact that high-status men, who are otherwise able to secure sexual partners, rape, thus challenging their theory that only losers rape. In that case, they propose that "their raping must result from adaptations other than that suggested by the [low-status] hypothesis" (p. 68). Thus, we have two more specific psychological adaptations proposed in order to deal with anomalies from the main rape adaptation theory, under which the genetic underpinnings of rape were supposedly fixed among human beings. We can see an evasive tactic emerging: if ever an anomaly threatens Thornhill and Palmer's project, they simply propose more psychological adaptations.

35. P. 61. The authors cite LEE ELLIS, *THEORIES OF RAPE: INQUIRIES INTO THE CAUSES OF SEXUAL AGGRESSION* (1989); Lee Ellis, *The Drive to Possess and Control as a Motivation for Sexual Behavior: Applications to the Study of Rape*, 30 *SOC. SCI. INFO.* 633 (1991); and Neil M. Malamuth, *The Confluence Model of Sexual Aggression: Feminist and Evolutionary Perspectives*, in *SEX, POWER, CONFLICT* 269 (David M. Buss & Neil M. Malamuth eds., 1996).

36. Aurelio J. Figueredo et al., *A Brunswikian Evolutionary-Developmental Model of Adolescent Sex Offending*, *BEHAV. SCI. & L.* 309 (2000).

37. Geoffrey Miller, evolutionary psychologist at University College, London, also challenges Thornhill and Palmer's neglect of the psychopathology explanation: "psychopaths are discussed on only one page, though they account for a substantial proportion of all rapists, and the majority of multiple rapists. . . research shows there are heritable genetic differences in many traits that may predict the tendency to use sexual coercion, such as disagreeableness, psychoticism, low intelligence and alcoholism." Geoffrey Miller, *Why Men Rape*, *EVENING STANDARD*, Mar. 6, 2000, at 53 (reviewing RANDY THORNHILL & CRAIG T. PALMER, *A NATURAL HISTORY OF RAPE: BIOLOGICAL BASES OF SEXUAL COERCION* (2000)).

Yet another type of data is patently relevant to Thornhill and Palmer's hypotheses but is not considered: comparisons between human beings and our closest relatives, the chimpanzee and the bonobo. Thornhill and Palmer seem to have an internal conflict about whether to use comparative evidence, even though it is standard in contemporary evolutionary analyses. In one place, they argue for the importance of comparative analysis, "which is a fundamental tool in biology for understanding causation" (p. 120). They follow this approach when they appeal to the claim that rape occurs in many nonhuman species, such as orangutans. But when it comes to our closest relatives, the standards change: they claim that it is erroneous to think that the behavior of nonhuman primates is necessarily salient to human adaptations (p. 56). What motivates this sudden switch? Perhaps this: the rate of rape among chimpanzees is very low, and the majority of these are brother-sister rapes; moreover, rape has never been observed at all in bonobos.³⁸ These are our two closest living relatives. This information clearly damages their case. It places extra burdens on them to produce a uniquely human account of the evolution of rape, one that does not rely on common traits about sex differences in sexuality that we share with our nearest relatives. Instead, Thornhill and Palmer rely heavily on comparative evidence from scorpionflies (pp. 63-64).

Finally, perhaps the crucial assumption of their entire book is that rape is, indeed, a reproductively successful strategy — but they leave this assumption almost completely unsupported. In fact, the current rape statistics seemingly undermine their conclusions. According to a study they cite themselves, the success rate that reported rapists currently have at inseminating their victims is only about 2%.³⁹ Worse for Thornhill and Palmer, 50% of pregnant rape victims in a U.S. study terminated their pregnancy through therapeutic abortions, and another 12% resulted in spontaneous abortion (p. 100). But Thornhill and Palmer are not deterred by these results. They dismiss objections to their views by stating that such contemporary evidence is not relevant to whether rape was an adaptation in our evolutionary past.⁴⁰

38. Personal communication with Richard Wrangham, Harvard anthropologist. See JANE GOODALL, *THE CHIMPANZEES OF GOMBE* (1986). Despite Thornhill and Palmer's approving citations of Wrangham and Dale Peterson's *Demonic Males: Apes and the Origins of Human Violence*, Wrangham notes there that feminists are right in seeing rape as involved with power relations, not just as a conceptive strategy.

39. This 2% must be compared within the context of the overall lifetime reproductive success of those using the rape strategy, those not, and mixed cases. Even though Thornhill and Palmer do not compare these various strategies, it is still possible that a 2% rate of insemination is strong enough to provide a selective pressure, even with high abortion rates. They need to show that raping provided, at some time in history, a higher frequency of fertilization than non-rape for these individuals. But they have not shown this.

40. This, in spite of their heavy use of such contemporary evidence in other contexts. Nonetheless, the authors are certainly correct about this.

The problem is that Thornhill and Palmer make no effort to describe the relevant environmental (including cultural) circumstances in our evolutionary past in any detail, either in support of or against the rape hypotheses they consider. We would normally demand some evidence regarding, for example: the percentage of women who either abort or kill their rape-begotten infants⁴¹; the likelihood that any given woman of reproductive age either is nursing (with its concomitant reduction in fertility) or is already pregnant at any given moment; or what percentage of rapists were caught and punished, which could be calibrated to the ancestral group size and the likelihood of being caught. But Thornhill and Palmer make no effort to provide this crucial evidence, which is badly needed in order to evaluate their hypotheses.

IV. THE ENEMY

Thornhill and Palmer begin their chapter on "Law and Punishment" with a caricature of social scientists, who supposedly believe in "cultural determinism." They claim: "Cultural determinism is consistent with free will and with the ability of humans to change their behavior *easily* by adopting new social constructs" (p. 153; emphasis added). Needless to say, the "ease" of adopting new social constructs is an imaginative piece of misinterpretation by Thornhill and Palmer. Social scientists tend to view social and cultural forces as entrenched and as acting over the lifetime of the individual's development, and thus as very *difficult* to change. Hence, when Thornhill and Palmer point out that the "ease" of change "is in conflict with everything that is known about the interaction of genetic and environmental factors in the development of all behavioral abilities" (p. 153), they are in agreement, not opposition, with their supposed targets. They continue by stating that our real need is to understand "how human-mediated alterations in the developmental environment can produce desirable behavioral changes" (p. 153), thus stating the obvious, and outlining the standard goal of many sociological, criminal, and psychological studies. Thornhill and Palmer see their stated goals as conflicting with the social sciences only because they see evolutionary theory as "crucial, since it predicts that the developmental events of interest will occur in response to specific cues that, in our history as a species, were most reliably correlated with reduced consensual sex with females" (p. 154). But these specific cues are part of what the social scientists in question study.

41. See SARAH BLAFFER HRDY, *MOTHER NATURE: MATERNAL INSTINCTS AND HOW THEY SHAPE THE HUMAN SPECIES* (1999), in which she argues for the prevalence of abortion and infanticide in human evolutionary history.

Moreover, instead of including fair critical examination of various alternative hypotheses for the development of rape in men, Thornhill and Palmer attack a caricature of what they call the “feminist psychosocial” position. They spend a full sixty pages of this slim 200-page book attacking feminist views on rape, which they inexplicably equate with “the social science theory.” The feminist view supposedly says that sex has absolutely nothing to do with rape (the “not sex” view), and that rape is instead exclusively about the power and control over women, about misogyny, and about the exercise of patriarchal values. Their ultimate target for this view is Susan Brownmiller, who successfully inspired changes in the political and legal atmosphere surrounding treatment of rapists and victims with her 1975 book, *Against Our Will*.⁴² In Thornhill and Palmer’s précis of their book, published in *The Sciences*, they wrote:

In 1975 the feminist writer Susan Brownmiller asserted that rape is motivated not by lust but by the urge to control and dominate. In the twenty-five years since, Brownmiller’s view has become mainstream. All men feel sexual desire, the theory goes, but not all men rape. Rape is viewed as an unnatural behavior that has nothing to do with sex, and one that has no corollary in the animal world.⁴³

But Brownmiller never professed the primary mistake attributed to her, namely, that rape does not involve sex. In fact, Brownmiller refers to rape as a sexual act throughout the whole 1975 book. For example, she calls rape “a ‘taking’ of sex through the use or threat of force.”⁴⁴ Elsewhere she recounts instances in which rape is a *sexual* reward for the male slave, and a *sexual* privilege for the masters.⁴⁵ In other words, she clearly and repeatedly categorizes rape as sex.

More recently, in an appearance on the National Public Radio show “Talk of the Nation” with Thornhill, Brownmiller insisted:

I never said that rape was not involved with sex. Obviously, it uses the sex organs. What the women’s movement did say, starting in the 1970s, was that rape was not *sexy*, you see. The men, up to that point, had romanticized rape and always presented scenarios of beautiful but just slightly unwilling, but really teasing victims. And the act was construed as sort of a Robin Hood act of machismo. When women started to speak up about their own experiences of rape, the first thing they said was, “No, there’s nothing sexy about this. This was pure power humiliation, degradation.” And that’s where the feminist theory came from, out of listening to the experiences of women.⁴⁶

42. SUSAN BROWNMILLER, *AGAINST OUR WILL: MEN, WOMEN AND RAPE* (1975).

43. Randy Thornhill & Craig T. Palmer, *Why Men Rape*, *SCIENCES*, Jan.-Feb. 2000, at 30, 30.

44. BROWNMILLER, *supra* note 42, at 377.

45. *Id.* at 157-58.

46. *Talk of the Nation* (Nat’l Public Radio, Jan. 26, 2000) (emphasis added).

Thornhill expressed surprise during this radio show at Brownmiller's statement that sex was involved in rape.⁴⁷ But this response was disingenuous at best, because Brownmiller had previously attempted to correct Thornhill's specific misrepresentation of the feminist view as the "not sex" view of rape. She and Barbara Mehrhof were commentators on a 1992 target article in *Brain and Behavioral Sciences* written by Thornhill and his former wife, Nancy Thornhill.⁴⁸ In the commentary, Brownmiller and Mehrhof state, "[t]he central insight of the feminist theory of rape identifies the act as a crime of violence The sexual motivation, orgasmic release, is a secondary component."⁴⁹

Why, then, does Thornhill now publicly feign surprise at Brownmiller's resistance to the former's characterization of her view as the "not sex" view? Perhaps because in their book, Thornhill and Palmer attribute to Brownmiller a series of straw person "arguments" that depend on her maintaining the "not sex" view. They then attempt to debunk these arguments. A closer look reveals that what they claim Brownmiller says differs from what Brownmiller actually said.

Take Thornhill and Palmer's "Argument 9," supposedly put forward by Brownmiller: "It is not a crime of lust but of violence and power . . . rape victims are not only the 'lovely young blondes' of newspaper headlines — rapists strike children, the aged, the homely — all women" (p. 138). In elaborating their rebuttal to this claim, Thornhill and Palmer focus on the ages of rape victims and argue:

The statement that "any female may become a victim of rape" (Brownmiller 1974, p. 348) does not imply that the "rapist chooses his victim with a striking disregard for conventional 'sex appeal'" (ibid., p. 338). Contrary to Brownmiller, although any female *might* become a victim of rape, some women are far more likely to become victims of rape than others. Indeed, one of the most consistent finding [sic] of studies on rape, and one not likely to be due entirely to reporting bias, is that women in their teens and their early twenties are highly overrepresented among rape victims around the world.⁵⁰

Now consider what Brownmiller actually said on the pages quoted. On the same page as the second sentence they quote, Brownmiller writes:

Statistical probability does matter. Just as there is a calculable "typical" rapist, there is also, to a lesser degree of certainty, a "typical" victim. While any woman is a natural target for a would-be rapist, the chances

47. *Id.* (Thornhill to Brownmiller: "And that you're saying now that rape is sex and so forth is kind of amazing").

48. Randy Thornhill & Nancy W. Thornhill, *The Evolutionary Psychology of Men's Coercive Sexuality*, 15 BEHAV. & BRAIN SCI. 363 (1992).

49. Susan Brownmiller & Barbara Mehrhof, *A Feminist Response to Rape as an Adaptation in Men*, 15(2) BEHAV. & BRAIN SCI. 381, 382 (1992).

50. Pp. 138-39.

are that a rape victim will be of the same class and race as her attacker, at least between 70 and 90 percent of the time. More often than not, she also will be approximately the same age as her attacker, or slightly younger. Overall, the danger to women is greatest between the ages of 10 and 29. Teenage girls, simply by being teenage girls, run the greatest risk of any age group.⁵¹

In other words, Brownmiller *explicitly denies* that all women are equally likely to become rape victims, and in fact emphasizes the same results as Thornhill and Palmer, in direct contradiction to their charge.

In all, four of the nine “feminist” arguments they attempt to debunk are attributed to Brownmiller, so it is significant that the textual evidence and the verbal reports of that author deny the basic premise of these arguments, namely, that sex is not involved in rape. Further difficulties abound. Feminist “Argument 1” consists of a quote taken from *opponents* to a feminist understanding of rape (p. 133). Ordinarily, honest scientists consider versions of arguments from their proponents and not their proponents’ enemies. This is not the only time, however, that Thornhill and Palmer use the tactic of representing their enemies’ views unfairly. For example, they also use antifeminist Dwight D. Murphey,⁵² who presents a popular press version of Brownmiller’s view of rape that misrepresents her position as a “not sex” view (p. 125). In sum, Thornhill and Palmer must be considered unreliable on the issue of what feminists have said, and how it relates to their own views.

Now consider the following argument: all matter is subject to the laws of quantum mechanics and relativity theory. Therefore, population geneticists cannot have a legitimate explanation of the behavior of genes, because they fail to appeal to the *fundamental causes* of matter’s behavior.⁵³ This amounts to a denial of the legitimacy of an independent level of explanation for a non-“fundamental” theory.

Implausibly, Thornhill and Palmer use the same form of argument in this book, wherein they reject higher, independent levels of explanation above the ordinary biological level as not being fundamental enough. This argument is unacceptable regarding population genetics, and it is unacceptable concerning the social science levels of explanation that Thornhill and Palmer want to delegitimize.

One of the most confused and confusing aspects of Thornhill and Palmer’s arguments is the claim that “every aspect of every living thing is, by definition, biological” (p. 20). Their argument runs as follows. All behavior is biological because it evolved. Therefore all ex-

51. BROWNMILLER, *supra* note 42, at 348.

52. Dwight D. Murphey, *Feminism and Rape*, 17 J. SOC. POL. & ECON. STUD. 13 (1992).

53. This example is due to Michael Dickson, History and Philosophy of Science Department, Indiana University.

planations of that behavior must be biological, since there is no psychological, sociological, or cultural explanation that is not fundamentally biology. Therefore, all research into behavior must involve and be guided by evolutionary biology. As they put it, culture is "still biological and subject to the only general biological theory — evolution by selection" (p. 24). (Never mind the false equation of evolutionary theory itself with evolution by selection.)

Shockingly, this line of argument is supposed to show that social scientists such as psychologists and sociologists cannot do their research — investigating and identifying the range of environmental factors influencing behavior — without doing evolutionary biology simultaneously.⁵⁴ Of course, it implies nothing of the kind: the search for environmental factors affecting phenotypes can proceed in the complete absence of a specific evolutionary hypothesis. Furthermore, having an evolutionary hypothesis about a trait does not by any means isolate the relevant learning factors that go into producing that trait. Both of these points are denied vehemently by Thornhill and Palmer (pp. 84, 153, 156).

Note how the apparently trivial claim that "everything is biological" is now doing real work here. They want to claim that someone not using the evolutionary level of explanation for a human phenomenon offers no explanation at all. But even according to their own view, research into the *relevant causes* of different developmental outcomes in human beings is a necessary part of the explaining that they want to do. If some of the relevant causes are cultural, then cultural research into such causes is totally legitimate, and in fact necessary. Or do they want to rule out cultural causes as possible influences on human development? Apparently not, for they say, "[y]es, some differences in behavior between individuals could be due entirely to cultural influences that have affected their behavior" (pp. 24-25). But this does not mean, they say, that "an individual's culturally influenced behavior is due entirely to environmental causes and hence is not biological" (p. 25). But they have just admitted that, in the case at hand, the differences between one individual and another can be entirely cultural, and not *explicable* at the level of biology.

And therein lies the rub. They want to deny that cultural explanations can really *explain* anything — that the cultural level of investigation is a legitimately explanatory one. On what basis? On the basis that "an individual's cultural behavior is still a product of gene-environment interactions. And the individual can learn nothing with-

54. In criticizing social scientists, Thornhill and Palmer actually claim that evolved cognition itself may interfere with evolutionary investigation into cultural phenomena: "Evolved psychological intuitions about behavioral causation can mislead individuals into believing that they know as much as *experts* do about proximate human motivation." P. 114 (emphasis added). The experts on social behavior here seem to be the evolutionists, rather than the social scientists.

out underlying adaptation for learning" (p. 25). We can agree to these last statements and yet believe that a purely cultural investigation of individual differences in development is both necessary and explanatory. Nevertheless, Thornhill and Palmer insist that "[t]he cultural behavior of individuals is *never* independent of the human evolutionary history of selection for individual reproductive success" (p. 29). What they mean by "independent" here is *explanatory* independence, as becomes painfully obvious in their fierce attack on the possibility of the social sciences telling us anything useful about human rape. But they have not successfully argued for *explanatory* dependence of the social on the biological. At best, they have argued the reverse, with their own admission of the explanatory power of cultural explanation of difference.

V. LEGAL AND SOCIAL CONSEQUENCES

Thornhill and Palmer repeatedly promise that moving to the evolutionary level of explanation will make everything better: therapeutic treatment of rape victims; reduction in the incidence of rape; improvements in how rape is treated in the courts; and understanding of the developmental, social, and cultural "conditional" factors producing rapists from male babies (pp. 82, 84, 97, 114, 153, 154, 156, 158, 187). Despite this repetition, they offer no evidence whatsoever for any of these claims; all we get are promises. But they do offer a few concrete remarks, well supported or not, concerning the legal treatment of rapists. They also suggest ways to improve rape prevention training.

As Thornhill and Palmer acknowledge, people have a strong tendency to react to their theories by indulging in what is known as the "naturalistic fallacy": equating claims of what is "natural" with claims of what is "good" or morally defensible. Since the authors do not condone rape, they attempt to deter this reaction repeatedly. But their eagerness to publish a poorly supported and inflammatory theory — one that predictably evokes the naturalistic fallacy — seems irresponsible. Most published editorials and letters to the editor invoking these authors commit precisely this fallacy. Accusing people of a "lack of scholarship" just is not good enough (p. 122).

They respond to the naturalist fallacy as follows: "Contrary to the common view that an evolutionary explanation for human behavior removes individuals' responsibility for their actions, individuals who really understood the evolutionary bases of their actions might be better able to avoid behaving in an 'adaptive' fashion that is damaging to others" (p. 154). Now specifically how is this knowledge supposed to help change the rapist's behavior? Do they have evidence that such knowledge would be connected with a lower incidence of rape? Is this even plausible? They propose a rape-prevention education program

for teenage boys — one that could perhaps be required before they get their driver's licenses — which involves explaining the evolutionary basis of their sexual desires, and which encourages them to control their sexual impulses (p. 179). (And these are the authors who criticized the sociologists for believing that behavior can easily be changed!) After such an education, they suggest, "refusal to refrain from damaging behavior in the face of scientific understanding could be seen as a ground for holding irresponsible individuals *more* culpable, not less so" (p. 154).

This suggestion raises a host of questions. For instance: since they emphasize that evolutionary theory is very complicated and difficult, how are they planning to teach it in this mini-course?⁵⁵ Also, since they know that most people's reaction to their view *is* to commit the naturalistic fallacy, why assume that the instructees (or their instructors) would be any different, and would not also conclude that rape is natural, and therefore inevitable or acceptable? They do emphasize that teaching that the naturalistic fallacy *is* a fallacy will be part of their suggested course (pp. 179-180), but can we assume that it will be understood?

One striking thing about Thornhill and Palmer's discussion of rape prevention and punishment is how many of their ideas are borrowed *directly* from the feminist accounts they deride. For instance, they note that "rape has traditionally been defined and punished not from the victim's perspective but from a male perspective, and particularly from the perspective of the victim's mate."⁵⁶ They also note that rules and laws generally serve the interests of the powerful — for example, men as opposed to women.⁵⁷ Furthermore, statutory rape laws should be understood in the context that, in most societies, "daughters have been viewed as their father's property."⁵⁸ As far as rape prevention goes, their suggestions are nearly all features that have been central to the feminist revolution in rape counseling: advising caution about having men and women alone in isolated places; advocating self-defense training; urging women to exert greater control over circumstances "in which they consent to be alone with men" (p. 186). They differ from feminist advice in their recommendation that women wear more concealing clothing (even though they offer no evidence of a correlation between the amount of skin shown and rape). But Thornhill and Palmer claim that all this follows only from the evolu-

55. Thornhill himself argued in a radio appearance: "[Y]ou know, evolutionary biology is complex. Science is complex. In fact, many have pointed out that the facts and theory of evolution are the most complex set of ideas we have out there . . ." *Talk of the Nation* (Nat'l Public Radio, Jan. 26, 2000).

56. Pp. 154-55; cf. BROWNMILLER, *supra* note 42, at 14, 18-30, 376-77.

57. P. 162; cf. BROWNMILLER, *supra* note 42, at 17.

58. P. 162; cf. BROWNMILLER, *supra* note 42, at 17-18, 376.

tionary perspective, and that only the evolutionary perspective can help direct research towards treatment that will alleviate the pain and suffering caused by rape (pp. 187-88).

As far as legal punishment goes, Thornhill and Palmer do not propose a specific program; they simply claim that any such program of punishment should be informed by what is known about evolution. They do discuss one possible punishment in detail, though — *chemical castration*. They defend chemical castration on the basis of evolution, claiming that since rape is about reproductive sex, chemical castration might be an effective preventative.⁵⁹ They fail to address the problem, however, that such an approach has a good chance of reducing the conviction rate of rapists, since juries may be more reluctant to interfere with the suspect's "manhood" than they are to sending him to prison for a few years.

All told, this book contains little information of specific interest to lawyers, beyond this discussion of chemical castration and the constant preaching about how an evolutionary approach is necessary to understanding rape. Thornhill and Palmer's recommendations for rape prevention — with the exception of the driver's ed class — are not new. The only thing really new here is that they urge both lawyers and lay people alike to see rape as *purely* a sexual act, proximally motivated by an out-of-control male libido. Of course, that view is not really new either; in fact, it is rather old-fashioned. The public and lawyers alike must decide if this reduced view of rape as sex alone really represents the truth about rape. Based on the weaknesses in their evolutionary biology alone, I think the answer is clear. When the data-fudging and gross misrepresentation of other explanatory approaches are added to the mix, I take it to be the responsibility of educated people to resist Thornhill and Palmer's conclusions about rape. In fact, the only circumstance under which I think this book should be read is one in which a prosecutor is faced with a defendant's lawyer who plans to call one of these authors or their followers to the stand. In that case, the attorney should read the book, then go out and hire a *real* evolutionary biologist as an expert witness.

59. Pp. 165-66. According to Dani Robbins Zulich, director of the Women's Coalition at Case Western Reserve University, experiments in treating rapists with surgical and chemical castration have not proven effective. See Karen Sandstrom, *Study of Rape Hits Ideological Wall; Linking Cause to Evolution Ignites Backlash*, In *Review of Thornhill and Palmer*, PLAIN DEALER, Feb. 27, 2000, at 111.